

DQA: _____ Date: _____



WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____		DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐		AGAINST DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Thermoforming ☐ Large Fab ☐ Cross tube ☐ Small Fab ☐ Finishing ☐ Composite ☐ Water Jet ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Supplier ☐ Engineering ☐ Quality ☐ Other ☐					
Date :		Step #:		QTY Effective :			MRB (QSI042) Approval 		
Description Work Order Deviation				Disposition					
								Completed By	
								Lead hand / Supervisor Approval Verification	
								QC / QA Coordinator Approval	
Root Cause		FAULT CATEGORY							
Environment ☐	No Re-verification ☐	Pressure/Forced ☐	Temperature/Cure ☐	Power Loss/Surge ☐	Positioned Wrong ☐				
Design ☐	Operator ☐	Bending ☐	Set-up ☐	Folio/Program ☐	Outside Dimensions ☐				
Doc/Data ☐	Offset/Setup ☐	Centre Not Concentric ☐	BOM/Route ☐	Grain ☐	Over/Under tolerance ☐				
Equip/Tooling ☐	Supplier ☐	Cracks ☐	Broken/Damage/Defect ☐	Weld ☐	Part Incorrect ☐				
Handling/Pre ☐	Training ☐	Crimp/Kink/Ripple/Wave ☐	Inspection Incomplete/Unqualified ☐	Wrong Stock Pulled ☐	Part Lost/Missing ☐				
Material ☐	Use for Testing ☐	Cuffs ☐	Contamination ☐	Out of Sequence ☐	Part Moved ☐				
Internal Transport ☐	Poor Information ☐	Crushing ☐	Countersink ☐	Off-set ☐	Drawing ☐				
Tribal Knowledge ☐	Rushing ☐	Heat Treat ☐	Cut Too Short ☐	Mislabeled ☐	Finish ☐				
LOA ☐	Product Improvement ☐	Wave/Twist in Tube ☐	Instructions Incomplete/Unclear ☐	Fit/Function ☐	Misread ☐				
Substation ☐	Process Improvement ☐	Marks/Chatter ☐	Drill Holes ☐	Misaligned/off center ☐	Turning Sequence ☐				
Past Expiry Date ☐	Manufacturing Process ☐	OTHER : _____							
Misidentified ☐	Past Due ☐								

Work Order ID 141731

Wednesday, February 10, 2016 2:19:00 PM

141731

PRELIMINARY ISSUE

Page 2

Item ID: D5311-1 Accept ***N900040100*** Setup Start ***NS1***
Revision ID: PRELIM Stop ***NS2***
Item Name: Swivel Joint, Inner
Start Date: 2/10/2016 Start Qty: 3.00 ***3*** Cust Item ID:
Required Date: 2/17/2016 Req'd Qty: 3.00 ***3*** Customer:
Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____ Run Start ***NR1***
QC: _____ Date: _____ SPC (Y/N): _____ Date: _____ Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
130 *130* QC Quality Control	QC8- Inspect parts - second check Memo	0.00 0.00				(3)			DAS 38 9-89 FEB 16 2016
140 *140* Packaging Packaging	Identify as per dwg & Stock Location: <u>PRELIM</u> Memo ST/62	0.00 0.00		2		(3)			DAS 38 9-89 MAY 25 2016 FEB 16 2016
150 *150* QC Quality Control	QC21- Final Inspection - Work Order Release Memo	0.00 0.01							MAY 26 2016 FEB 17 2016 MCS

POSITIVE RECALL
EFFECTIVE FEB 10 2016 AUTH MCS
RELEASED 9 DATE 16-05-24
of rev B
as per FCW16-557 RD16-1021-01

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				Lead hand / Supervisor Approval Verification	
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Root Cause Environment ☐ Design ☐ Doc/Data ☐ Equip/Tooling ☐ Handling/Pre ☐ Material ☐ Internal Transport ☐ Tribal Knowledge ☐ LOA ☐ Substation ☐ Past Expiry Date ☐ Misidentified ☐ No Re-verification ☐ Operator ☐ Offset/Setup ☐ Supplier ☐ Training ☐ Use for Testing ☐ Poor Information ☐ Rushing ☐ Product Improvement ☐ Process Improvement ☐ Manufacturing Process ☐ Past Due ☐		FAULT CATEGORY Pressure/Forced ☐ Bending ☐ Centre Not Concentric ☐ Cracks ☐ Crimp/Kink/Ripple/Wave ☐ Cuffs ☐ Crushing ☐ Heat Treat ☐ Wave/Twist in Tube ☐ Marks/Chatter ☐ Temperature/Cure ☐ Set-up ☐ BOM/Route ☐ Broken/Damage/Defect ☐ Inspection Incomplete/Unqualified ☐ Contamination ☐ Countersink ☐ Cut Too Short ☐ Instructions Incomplete/Unclear ☐ Drill Holes ☐ Power Loss/Surge ☐ Folio/Program ☐ Grain ☐ Weld ☐ Wrong Stock Pulled ☐ Out of Sequence ☐ Off-set ☐ Mislabeled ☐ Fit/Function ☐ Misaligned/off center ☐ Positioned Wrong ☐ Outside Dimensions ☐ Over/Under tolerance ☐ Part Incorrect ☐ Part Lost/Missing ☐ Part Moved ☐ Drawing ☐ Finish ☐ Misread ☐ Turning Sequence ☐			
OTHER : ☐					

Picklist Print

Wednesday, February 10, 2016 2:19:06 PM

PRELIMINARY ISSUE

Page 1

Work Order ID: 141731

141731

Parent Item: D5311-1

D5311-1

Parent Item Name: Swivel Joint, Inner

Start Date: 2/10/2016

Required Date: 2/17/2016

Start Qty: 3.00

Required Qty: 3.00

Comments: IIN REV:A 16.02.10 NEW ISSUE DD VERF:JLM

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Qty per Kit	Total Qty	Qty Issued	Date Issued	Status
M304RO.750		Purchased		No			f	33.8200		0.315789			
M304RO 750									**			16/02/18	DAS 40 9-89
304 SS Roundbar .750													

Location

Loc Qty

Loc Code

MAT029

33.82

M128005

0.247

M128496

9.573

M133587

12

→ M134158

12

0.55

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Date :		Step #:		QTY Effective :			MRB (QSI042) Approval Completed By Lead hand / Supervisor Approval Verification QC / QA Coordinator Approval		
Description Work Order Deviation				Disposition					
Root Cause Environment ☐ Design ☐ Doc/Data ☐ Equip/Tooling ☐ Handling/Pre ☐ Material ☐ Internal Transport ☐ Tribal Knowledge ☐ LOA ☐ Substation ☐ Past Expiry Date ☐ Misidentified ☐ No Re-verification ☐ Operator ☐ Offset/Setup ☐ Supplier ☐ Training ☐ Use for Testing ☐ Poor Information ☐ Rushing ☐ Product Improvement ☐ Process Improvement ☐ Manufacturing Process ☐ Past Due ☐		FAULT CATEGORY Pressure/Forced ☐ Bending ☐ Centre Not Concentric ☐ Cracks ☐ Crimp/Kink/Ripple/Wave ☐ Cuffs ☐ Crushing ☐ Heat Treat ☐ Wave/Twist in Tube ☐ Marks/Chatter ☐ Temperature/Cure ☐ Set-up ☐ BOM/Route ☐ Broken/Damage/Defect ☐ Inspection Incomplete/Unqualified ☐ Contamination ☐ Countersink ☐ Cut Too Short ☐ Instructions Incomplete/Unclear ☐ Drill Holes ☐		Power Loss/Surge ☐ Folio/Program ☐ Grain ☐ Weld ☐ Wrong Stock Pulled ☐ Out of Sequence ☐ Off-set ☐ Mislabeled ☐ Fit/Function ☐ Misaligned/off center ☐ Positioned Wrong ☐ Outside Dimensions ☐ Over/Under tolerance ☐ Part Incorrect ☐ Part Lost/Missing ☐ Part Moved ☐ Drawing ☐ Finish ☐ Misread ☐ Turning Sequence ☐					
		OTHER : ☐							

DQA: _____ Date: _____



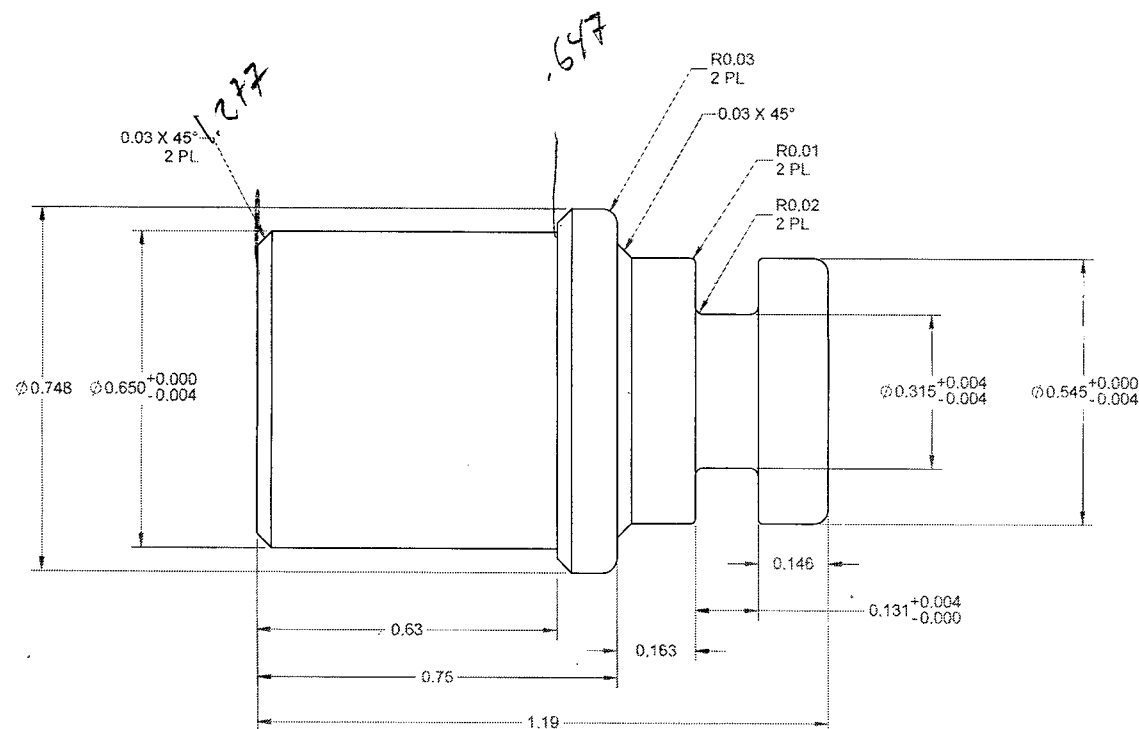
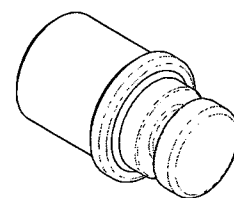
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		OTHER : ☐							

1602-10



SHOP COPY
RETURN TO
ENGINEERING
UNCONTROLLED COPY
SUBJECT TO AMENDMENT
WITHOUT NOTICE
WORK ORDER
NO. 141731 MJS
1602-10

D5311-1 SWIVEL JOINT, INNER

PRELIMINARY ISSUE

16.02.10 KJ

NOTES:

- 1) MATERIAL: AISI 304/316 SS ROUND BAR
PER ASTM A276
REF DART SPEC M304R
- 2) FINISH: N/A
- 3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED
- 5) BREAK SHARP EDGES: 0.005 TO 0.010 MAX
- 6) IDENTIFICATION: N/A
- 7) WEIGHT: 0.10 lbs

APPROVED

DESIGN	AK	DART AEROSPACE LTD	
DRAWN	AK	HAWKESBURY, ONTARIO, CANADA	
CHECKED	CC	DRAWING NO.	REV. A
MFG. APPR.	DD	D5311	SHEET 2 OF 4
APPROVED	HS	TITLE	SCALE
DE APPR.	DS	ENGINE COWL SWIVEL PROP ROD NTS	NTS
DATE	15.09.28	COPYRIGHT © 2015 BY DART AEROSPACE LTD THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE LTD.	

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Design ☐	Operator ☐	Bending ☐	Set-up ☐	Folio/Program ☐	Outside Dimensions ☐				
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Past Expiry Date ☐	Manufacturing Process ☐	OTHER : _____							
Misidentified ☐	Past Due ☐								

Purchase Order Receipt Listing

Wednesday, February 03, 2016 10:48:12 AM

Page 1 of 2

All amounts are calculated in domestic currency.

All Vendors PO ID PO31143 All Receipt Dates All Line Item Types
All Item ID/GL/WOs All Rec. Employees All Currencies
Grouped by Vendor ID

Purchase Order ID/ Curr Type	Line Nbr/ Insp Req	Project ID	Reference/ Description/ Cert Std	PO U/M/ Stock U/M	Required Date Required Qty	Recv Date/ Recv Emp	Recv Qty (PO U/M)	Cost Per Unit/ Recv Value	Inspected Qty/ Rejected Qty (PO U/M)	MRB Qty/ MRB Reject Qty	Book Amt
Vendor ID \ Vendor Name VC-COP001 Thyssenkrupp Materials CA Ltd											
PO31143	1		M6061T6B2.750X03.750		2/3/2016	2/3/2016	12.0000	\$24.05	0.0000	0	\$288.64
CAD	No		6061-T6 BAR 2.75 X 3.75		12.0000	PLOU01		\$288.64	0.0000	0	
			m134158								
	5		M304RO.750		2/3/2016	2/3/2016	12.0000	\$2.38	0.0000	0	\$28.61
	No		304 SS Roundbar .750		12.0000	PLOU01		\$28.61	0.0000	0	
			m134158								
	6		M304S16GA		2/3/2016	2/3/2016	96.0000	\$3.07	0.0000	0	\$294.78
	No		304/3J6 Sheet .063		96.0000	PLOU01		\$294.78	0.0000	0	
			m134158								
	7		M6061T6B0.250X06.000		2/3/2016	2/3/2016	12.0000	\$2.98	0.0000	0	\$35.76
	No		6061-T6 Bar .250 x 6.00		12.0000	PLOU01		\$35.76	0.0000	0	
			m134158								
	9		M6061T6B0.750X00.750		2/3/2016	2/3/2016	12.0000	\$2.11	0.0000	0	\$25.29
	No		6061-T6 Bar .750 x .750		12.0000	PLOU01		\$25.29	0.0000	0	
			m134158								
	10		M6061T6B00750X00.125		2/3/2016	2/3/2016	60.0000	\$0.42	0.0000	0	\$25.29
	No		6061-T6 Bar .750 x .125		60.0000	PLOU01		\$25.29	0.0000	0	
			m134158								
	11		M6061T6BT.500X01.250		2/3/2016	2/3/2016	24.0000	\$3.52	0.0000	0	\$84.53
	No		6061-T6 Bar 1.50 x 1.25		24.0000	PLOU01		\$84.53	0.0000	0	
			m134158								

B I L L O F L A D I N G

No: PEC 975419

Ship From:
THYSSENKRUPP MATERIALS NA
2821 LANGSTAFF ROAD
CONCORD, ONTARIO L4K 5C6
Tel: 905 669 9444 Fax: 905-738-9033

Ship Date 03Feb16 at 12:10 From PFW
Probill
Via VIM DELIVERY
FOB CONCORD
Frt PREPAID
Route 0- 0 Manifest
Vhcle Trailer
Slp STAN IVERS (905-532-1350)
Sold To: (20115)
DART AEROSPACE
1270 ABERDEEN ST
HAWKESBURY, ON K6A 1K7

Ship To: (1)
DART AEROSPACE
1270 ABERDEEN ST
HAWKESBURY, ON K6A 1K7
Tel: 613-632-9577 Fax: 613-632-1053

B I L L O F L A D I N G

1) Our Order PEC-890877- 1 Your PO # 31143
STAINLESS STEEL ROUND BAR 304L
1.00" DIA X 144.0000"

B/O

2) Our Order PEC-890877- 2 Your PO # 31143
STAINLESS STEEL ROUND BAR 304L
1.750" DIA X 144.0000"

Heat Number Tag No
W9T2 498012

Quantity PCS Wt LBS
12 FT 1 19

3) Our Order PEC-890877- 3 Your PO # 31143
STAINLESS STEEL SHEET 304-2B
.0600 Nom X 48.0000" X 96.0000"

Heat Number Tag No
ANJ015-ABB 497522

Quantity PCS Wt LBS
96.00 SFT 3 229

4) Our Order PEC-890877- 4 Your PO # 31143
ALUMINUM FLAT BAR 6061-T6511
2.50" x 6.00" X 144.0000"

Heat Number Tag No
188132-3 498013

Quantity PCS Wt LBS
12 FT 1 22

5) Our Order PEC-890877- 5 Your PO # 31143
ALUMINUM FLAT BAR 6061-T6511
5.0" x 2.00" X 144.0000"

B/O

Page: 1Continued

80/6-02-03
473

TOUTES ERREURS ET/OU MARCHANDISES MANQUANTES DOIVENT ÊTRE
RAPPORTÉES IMMÉDIATEMENT.

ERRORS OR SHORTAGE MUST BE REPORTED IMMEDIATELY

RETOUR DE MARCHANDISES AVEC NOTRE NUMÉRO D'APPROBATION SEULEMENT
MERCHANDISE MAY NOT BE RETURNED WITHOUT OUR APPROVAL NUMBER.

THYSSENKRUPP MATERIALS NA

DART AEROSPACE
STAINLESS STEEL ROUND BAR 304L
1.750" DIA X 144.0000"
PART NO.

PO/R6431143

We certify that this is a true copy of the report
furnished by the producer of the metal, or data
resulting from tests made in approved labs.

Certificate of Mill Test Results

BL PEC-975419-002

29 Jan 16

Pg 1/1

Signed by: *[Signature]*



METALLURGICAL TEST REPORT

North American Stainless Canada Inc.
740 Imperial Road North
Guelph, ON N1K1Z3
Canada

740 Imperial Road North

Certificate: 113879 12

Mail To:

THYSSENKRUPP MATERIALS
2821 LANGSTAFF ROAD
CONCORD, ON L4K5C6

Ship To:

THYSSENKRUPP MATERIALS
2821 LANGSTAFF ROAD
CONCORD, ON L4K5C6

Date: 11/12/2015 Page: 1

Steel: 304/304L

Finish: CD

Customer: 007206 001

Corrosion: ASTM A262-10 Pract A/E OK

Your Order: PEC270632

NAS Order: PN 0058862 03

PRODUCT DESCRIPTION:

Round Bar, Annealed, Cold Draw
UNS 30400/30403 EN 10204 3.1, ASTM A484/13a
ASTM A276/13, ASTM A479/13a, ASTM A182/13 CHEM ONLY,
ASME SA479/13, ASME SA182/10 CHEM ONLY
AMS 5639H, AMS 5647J, AMS QQS-763C, QQS-763F, ASTM F899/11
SOLUTION ANNEAL TEMP 1900F MIN, ASTM A320/08 CL 1 GR B8
ASTM A193/10A-ASME SA193/10 CL 1 GR B8

REMARKS:

COMPLIES W/REQUIREMENTS OF DFAR 252.225-7009 EU DIRECTIVE
2011/65/EU RoHS. EAF+ACD+CC. NO WELD REPAIR. MELTED AND MFG
IN USA FREE FROM MERCURY AND LOW MELTING ALLOY CONTAMINATION

DAS 14 9:39 11/12/2015

Product Id	Shid # Diameter	Size	Weight	-----Length-----	Mark	Pieces	Commodity Code
BH5655 0		1.7500	1.026	144.00	7	1	

CHEMICAL ANALYSIS

CM(Country of Melt) ES(Spain) US(United States) ZA(South Africa) JP(Japan)

Lab Accreditation Bureau, ISO/IEC 17025, Certificate# L2323

Chemical Analysis per ASTM A751/08

HEAT	CM	C %	CO %	CR %	CU %	MN %	MO %	N %	NI %	P %
W9T2	US	.0210	.1900	18.2815	.4970	1.4665	.3875	.0802	8.6015	.0320
		S %	SI %							
		.0255	.3405							

MECHANICAL PROPERTIES

Product Id	1 A o i o r	HB No.	.2YS KSI	UTS KSI	RA %	Elong % 4D
BH5655 0	R L	197.0	80.45	99.90	70.68	47.41

NAS hereby certifies that the analysis on this certification is correct. Based upon the results and the accuracy
of the test methods used, the material meets the specifications stated. These results relate only to the items
tested and this report cannot be reproduced, except in its entirety, without the written approval of NAS.

Technical
Dept. Mgr.

[Signature]

ABHJEET BHAVE

11/12/2015



Dart Aerospace Ltd.
1270 Aberdeen Street
Hawkesbury, ON K6A 1K7
Tel: 613 632 9577
Fax: 613 632 1053

PURCHASE ORDER

Purchase Order ID **PO31143**

Purchase Order Date 1/26/2016

PO Print Date 1/26/2016

Page Number 2 of 7

Order From : VC-COP001
THYSSENKRUPP MATERIALS CA LTD
O/A VPK METAL- C/O T27540/PO BOX 4275,POSTAL"A"
TORONTO, ON M5W 5V8
CA

Ship To : DART AEROSPACE LTD
1270 ABERDEEN
HAWKESBURY, ON K6A 1K7
CANADA

Contact Name*

Vendor Phone 905 669 9444

Ship To Contact

Ship To Phone

Ship Via: VENDOR'S TRUCK

Ship Acct:

Buyer

Chantal Lavoie

Customer POID

Customer Tax #

10127-2607

Terms

Net 30

Currency

CAD

FOB

FCA - (Free Carrier)

3	M7075T6B6.000X0.250	7075-T6 BAR 6.000" X 0.250"	2/12/2016	12.00	\$24.17	\$290.00
			Yes	f		
			2/12/2016			

MATERIAL: 7075-T6 OR T651/T6510/T6511/T62 ALUMINUM BAR
AS PER AMS-QQ-A-225/9 OR AMS 4122/4123/4186/4187 OR
PER AMS-QQ-A-200/11 OR QQ-A-250/12 CUT FROM PLATE

Line Total: \$290.00

4	M304R1.000	304 round bar 1.00	2/3/2016	12.00	\$5.87	\$70.40
			Yes	f		
			2/3/2016			

MATERIAL: AISI 304/316 SS ROUND BAR AS PER ASTM A276

(NOTE: AISI 303 NOT ACCEPTABLE)

Line Total: \$70.40

5	M304RO.750	304 SS Roundbar .750	2/3/2016	12.00	\$3.30	\$39.60
			Yes	f		
			2/3/2016			

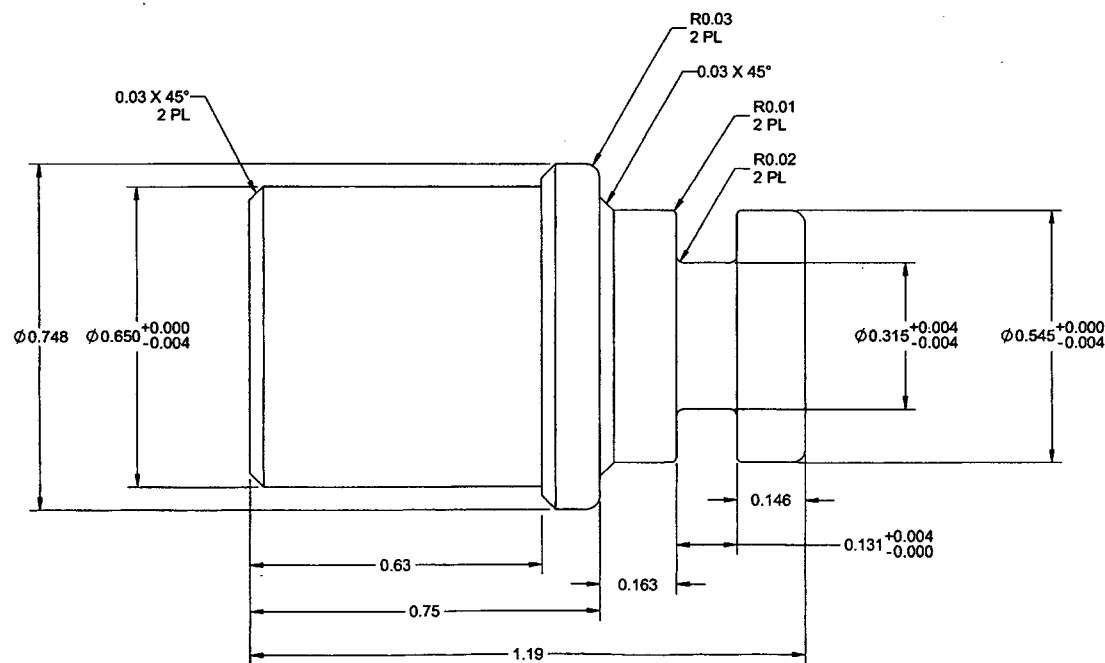
MATERIAL: AISI 304/316 SS ROUND BAR AS PER ASTM A276

(NOTE: AISI 303 NOT ACCEPTABLE)

PO Instructions: NOTE: FLAME CUT MAT'L NOT ACCEPTABLE
PEC ST-888734,
PEC ST-889987,

Note:

1/26/2016



D5311-1 SWIVEL JOINT, INNER

NOTES:

- 1) MATERIAL: AISI 304/316 SS ROUND BAR
PER ASTM A276
REF DART SPEC M304R
- 2) FINISH: N/A
- 3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED
- 5) BREAK SHARP EDGES: 0.005 TO 0.010 MAX
- 6) IDENTIFICATION: N/A
- 7) WEIGHT: 0.10 lbs

RELEASED
2016-04-18

APPROVED

DESIGN	AK	DART AEROSPACE LTD	
DRAWN	AK	HAWKESBURY, ONTARIO, CANADA	
CHECKED	CC	DRAWING NO.	REV. B
MFG. APPR.	DD	D5311	SHEET 2 OF 5
APPROVED	HS	TITLE	SCALE
DE APPR.	DS	ENGINE COWL SWIVEL PROP ROD NTS	
DATE	16.02.17	COPYRIGHT © 2015 BY DART AEROSPACE LTD	
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